SSL Postings

Results of the latest round of CALiPER testing were released recently, and as usual they can tell us a thing or two about the current state of solid-state lighting. As you may know, DOE's CALiPER program supports testing of a wide array of SSL products available for general illumination, and publishes the results in summary and detailed reports, as well as a searchable database that allows side-by-side comparisons with previous rounds and benchmark products. CALiPER Round 13 focused on three types of LED luminaires for commercial and industrial applications: high-bay luminaires, wallpacks, and 2'x2' troffers.

One thing it shows is that even in commercial lighting applications, which require high levels of light output and carefully designed light distribution, SSL luminaires are now clearly able to compete on a level playing field with traditional products. Most of the indicators from CALiPER Round 13 shed a positive light on the LED products in these categories, underscoring the fact that obtaining photometric data, understanding how it relates to the needs of the application in question, and comparing SSL and conventional options carefully are key to choosing the right products.

Round 13 shows that the average luminaire efficacy of products continues to increase, and color quality continues to improve. The average luminaire efficacy of the LED products tested in Round 13 was more than 60 lm/W, and most of them met or exceeded the efficacy of the traditional benchmark products tested. And while there were still some LED products that didn't perform well, particularly with regard to light distribution, there was significantly

less variation in product performance than in previous rounds, and a majority were found to meet or exceed manufacturer performance claims. Many of the products tested are taking advantage of the inherent strengths of SSL to achieve uniform light distribution similar to that of conventional luminaires, and in some cases are even improving on the uniformity of distribution.

Of special interest in Round 13 were the 2'x2' troffers. These were all integral luminaires, with SSL technology designed into the product as a whole in order to take full advantage of it - quite a different animal indeed from the LED products that are designed to simply replace the 4' linear fluorescent lamps used in 2'x4' troffers. While those LED linear replacement lamps still fall short of their fluorescent counterparts in terms of light output and distribution, the LED 2'x2' troffers tested in Round 13 fared much better, with some of them meeting the specifications developed by the DOE Commercial Building Energy Alliances and the DesignLights Consortium, a collaborative of utility and regional energy efficiency organizations.

Despite improvements, Round 13 shows that accurate reporting and product literature are still concerns - not only for LED lighting products, but also for their benchmark counterparts. In all cases, but especially for luminaires, it's important to know which version of a product the photometric data applies to, and not to assume that other versions of the product perform similarly. The products that were found to have accurate manufacturer claims - which were in the majority - tended to include detailed photometric performance specifications that referenced LM-79 and avoided the use of equivalency statements. Products that omitted this detailed photometric data and made vague equivalency claims tended to fall short of expectations. What's more, although only a portion of the products carried equivalency claims, most of those claims were found to be misleading or false, which means that buyers and specifiers should examine and understand photometric performance of both the LED products and conventional luminaires that they may

be replacing, rather than rely on equivalency statements in product literature. A new DOE Technology Fact Sheet, "Establishing LED Equivalency," offers guidance on understanding SSL equivalency claims.

As always, if you have questions or comments, you can reach us at postings@lightingfacts.com.